Helpful information for machine room fixed gas monitoring...

**TECHNOLOGY**

**Monitors for basic compliance**

Choose Thermal Gas System’s Photoacoustic IR (PIR) for the highest level of monitoring dependability.

- **Or, choose Haloguard CMOS**

- **Photoacoustic Infrared (PIR) technology** provides a direct measurement of refrigerant gas concentrations. Unlike other IR-based technologies, Photoacoustic IR (PIR) is a direct measurement of gas concentration. The absorption of a specific wavelength of IR light by a gas molecule.

- **Non-Dispersive IR** technologies are subject to “zero” level of monitoring dependability. System PIR instruments, “zero-is-zero.”

- **Greatest the concentration of measured gas.**

- **Temperature controlled, sealed sample cell in PIR reduces installation and maintenance costs.**

- **Scrubber required by other IR units.**

- **Changes on readings.**

- **Thermal Gas PIR units eliminates effects of temperature, humidity, and sample cell contamination.**

**ASHRAE 15-2013: CODE Excerpts**

Section 8.11.2.1 Refrigerating Machinery Room, General Requirements. Each refrigerating machinery room shall contain a detector, located in an area in which refrigerant vapor may accumulate. Each detector shall be connected to the panel to provide gas concentration and diagnostic information at a safe place outside the mechanical room.

- **Number of Sensors/Scrubbers & Placement**

- **Each refrigerating machinery room shall contain a detector, located in an area in which refrigerant vapor may accumulate.**

- **Submittal Information**

- **Complete**

**GAS SELECTIVITY**

- **r-502**

- **r-500**

- **r-134a**

- **r-11**

- **r-22**

**EXPOSURE LIMITS for common refrigerants**

<table>
<thead>
<tr>
<th>GAS</th>
<th>TLV-TWA</th>
<th>MEL</th>
<th>REL</th>
<th>CVF</th>
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PO Box 803, Roswell, GA  30077
Haloguard® Monitors Since 1988
11285 Elkins Road, Building H-1
Roswell, GA  30076
For more detail on these topics, visit www.thermalgas.com.
Haloguard® IR and Haloguard® III combine the most sensitive, highly selective Photoacoustic Infrared (PIR) detection with a multi-sensor digital control panel. The national state-of-the-art system for refrigerant gas detection, PIR technology virtually eliminates false alarms and is immune to electrical interferences (true optical technology advantage).

All Haloguard PIR models feature:
- Six available user adjustable alarms & one fault alarm.
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Haloguard® III features two adjustable alarm levels between 10%LEL and 100%LEL, and two additional alarms for fault and exhaust condition. Optional inputs include battery back-up, strobe and audible alarms. Solid state electronics ensure dependability. Sensors can be located up to 2500 feet from the controller.

**Remote IR Sensor Module**
For monitoring additional gases and/or sampling points on any Haloguard PIR module. Can be located up to 1500 feet from controller.

**Remote Display**
ASMAA compliant for monitoring and control of mechanical rooms. Coupled with Remote Display and any Haloguard IR systems to cost-effectively deliver comprehensive, fail-safe operation, input and output alarms at a safe location outside the service area.

**Haloguard II**
Multi-gas, multimode PIR cost-effective IR gas monitoring.
- Measuring range: 0-1,000 ppm all refrigerants
- Resolution: 1 ppm
- Sensitivity: 20 ppm
- Opt: 0-5VDC or 4-20mA analog
- Opt: RS-232
- Std: 4x3A dry contact relay
- Recovery time: <3 minutes
- Response time: <1 minute
- Accuracy: 10% full-scale
- Opt: 4 x 0-5VDC analog
- Std: Dry contact relay
- Materials:
  - Controller: 0-20°C to +50°C, 20% to 85% non-condensing
  - Sensor: CMOS Sensor: -20°C to +60°C, 10% to 90% non-condensing
  - Battery: 2x3V lithium battery

**Haloguard II Specification**
- Measuring range: 0-1,000 ppm all refrigerants
- Resolution: 1 ppm
- Sensitivity: 20 ppm
- Opt: 0-5VDC or 4-20mA analog
- Opt: RS-232
- Std: 4x3A dry contact relay
- Recovery time: <3 minutes
- Response time: <1 minute
- Accuracy: 10% full-scale
- Opt: 4 x 0-5VDC analog
- Std: Dry contact relay
- Materials:
  - Controller: 0-20°C to +50°C, 20% to 85% non-condensing
  - Sensor: CMOS Sensor: -20°C to +60°C, 10% to 90% non-condensing
  - Battery: 2x3V lithium battery

**SCBA**
The Survivair® Cougar® SCBA provides the finest respiratory protection against the demands of industrial users who do not require the performance of an MSA compliant SCBA, but need the finest respiratory protection against environments that are more extreme than OSHA Class E or health hazards.